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ABSTRACT

Multiple group discriminant analysis was used to determine if college students' evaluations of instruction were influenced by the course, the instructor, both, or neither. A measure of students' course-oriented attitudes, the Adjective Rating Scale (ARS), and a rating of instruction form, the Instructional Development and Effectiveness Assessment Survey (IDEA), were administered to 1,664 college students. It was concluded that students did make distinctions between courses and course instructors, but the distinctions were not clear cut. It was also found that student ratings of teaching behavior overlapped with their ratings of course characteristics, and students' course-oriented attitudes overlapped with their ratings of certain teacher behaviors. Implications of the study were limited by instrumentation and environmental factors, including sampling. (MH)

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The Influence of the Course Versus the Instructor in Student Ratings of Instruction: A Multiple Group Discriminant Analysis

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Abstract

This study employed multiple group discriminant analysis to determine if responses to a student rating of instruction questionnaire could discriminate between students who would recommend to other students that they take a given course, a given instructor, both, or neither. A measure of students' course-oriented attitudes and a student rating of instruction form were administered to sixty college classes. Factor scores from the two instruments were used as predictor variables. Results indicated that students do make a distinction between a course and the instructor of a course in responding to such instruments but, such a distinction is not clear cut.

Background and Problem Statement

There currently is considerable interest among college students, faculty, and administrators in evaluating faculty teaching effectiveness. "Included in this demand for evaluation has been the widespread use of formal student appraisal of courses and instructors" (Costin, Greenough, and Menges, 1971, p. 511). Reasons given for this surge of interest in student ratings of instruction range from pressures for accountability to student unrest (French-Lazovik, 1972).

Although the actual number of institutions that currently use formal student ratings of instruction is uncertain (Holzemer, 1975), the desire of faculty to see formal student ratings of instruction used as evidence of teaching effectiveness has been demonstrated (Scott, 1976). Menges (1973) stated that the teacher and his/her students are the only direct sources of information on what occurs in the college classroom, and, if classroom events are one focus for the evaluation of teaching, observations by students seem essential. In an extensive review of previous research, Costin, Greenough, and Menges (1971) concluded that student ratings of instruction are generally found to be stable, internally reliable, and valid with respect to many criteria of teaching effectiveness.

Other literature reviews and research projects have taken exception to the findings of Costin, Greenough, and Menges. Follman (1975) concluded that the personality characteristics of college student raters influenced their ratings of their instructors' teaching effectiveness, and Hogan (1973) found that the course setting affects student ratings of instruction. An unsettling study by Nauftulin, Ware, and Donnelly

(1973) has received a great deal of attention. These authors asked an actor to deliver a "Charismatic but nonsubstantive" lecture to a group of professional mental health workers (including psychiatrists, psychologists, educators, and administrators). Despite the lecture's nonsubstantive character, the audience rated it and the lecturer very favorably. The debate over the utility of student ratings of instruction was recently summed up by James Kulik: "Student ratings may be irrelevant and misleading, or they may be useful, convenient, reliable, and valid" (1974, p. 51).

Since student ratings of instruction have become a part of the evaluation of instruction in many colleges, it is desirable to know as much as possible about the properties of such ratings. The literature on college students' ratings of instruction dates from the 1920's, but there is little consistent agreement as to what ratings actually measure (Centra, 1972).

Most previous research on student ratings of instruction has correlated student, instructor, or class characteristics with such ratings. The research indicates that certain class characteristics, such as size, affect student ratings of instruction (Costin, Greenough, and Menges, 1971), and Holzemer (1975) found some evidence that a measure of the classroom environment is correlated with student ratings of instruction. The distinction between a course and the instructor of a course is seldom made in the literature, although the wording of many items on student rating forms suggests that such a distinction exists (Illinois CEQ, Syracuse IRS). Kulik recently noted the lack of clarification between ratings of a course and ratings of the instructor of a course.

> When students rate a teacher, they may be influenced by the characteristics of the teacher, by the characteristics of the course he is teaching, or by both. Which influence is more important? Do the clothes make the man, or does the man make the clothes? (Kulik, 1974, p. 52)

Very little research has investigated this distinction. Hogan (1973) obtained correlations between ratings for a group of instructors who taught the same course, for a group of instructors teaching different courses, and for a group of courses taught by two different instructors in two semesters. The rating instrument he used was factor analyzed and yielded four factors that he labeled Instructor's Skill, Instructor's Rapport with Students, Instructor's Structure (organization and planning), and Instructor's Difficulty (demanding a large amount of work). Hogan found that, for the factor termed Skill, the ratings of the instructor made a substantial contribution to the overall student ratings of instruction (proportion of variance accounted for = .51), but the contributions of course setting and error variation are also large, accounting for = .28 and .33 of the variance respectively; course setting and teacher influence contribute equally to ratings on Rapport. The teacher is the dominant influence on ratings of Structure; the course is the dominant influence on ratings of Difficulty (Hogan, 1976). Kulik stated, "Teachers of different courses cannot be compared easily because the various influences on an individual teacher's ratings cannot be disentangled at the present time" (1974, p. 54). Additional research on this aspect of student ratings of instruction is needed.

In the last few years, instructional development in higher education has been characterized by at least two competing approaches. One approach concentrates on increasing the instructors' repertoire of teaching techniques through the use of media, simulation, etc., and by attempting to make them more open and sympathetic to students (Freedman, 1973). A second approach gathers all the instructors involved in a particular course--or sequence of courses--and systematically redesigns the course, building content and time options into the structure of the course for the student (Diamond, et al., 1973). The process of redesigning a course decreases the instructional differences between sections taught by different instructors and the variance in course content and activities over time when the same instructor is involved. The first approach seems to assume that the instructor and the course are, in a sense, equivalent. The second approach appears to assume that the course can have an identity apart from the instructor. This study will examine one aspect of these competing assumptions, the ability of students to differentiate between a course and the instructor of a course.

Method

Design and Testing Procedures

Sixty-two faculty members at the State University of New York College at Cortland participated in this study. They were solicited by a phone call from the principal investigator during August of 1975. The faculty members were chosen on several pragmatic criteria. An attempt was made to include every department in the college, and to include some faculty who traditionally teach upper division courses and some who traditionally teach lower division courses in order to force a larger

representation of students, and finally, the faculty involved (with a few exceptions) were known to the principal investigator.

Two weeks before the end of classes, questionnaires, answer sheets, and pencils were mailed to each faculty member along with instructions for administering the instruments. The students were asked to respond to an Adjective Rating Scale; the stimulus item read, "I found this course to be." The students were also instructed to complete the IDEA Survey. (See instrumentation section.) The instructors were asked to place all materials in the manilla envelope provided and to return them to their departmental secretary where they were picked up by the principal investigator.

Instrumentation

Adjective Rating Scale. The Adjective Rating Scale (ARS) is a measure of course and program-oriented attutide that has been developed by E.F. Kelly at the Center for Instructional Development, Syracuse University (Kelly, 1971). The scale consists of twenty-four adjectives which are rated against the stimulus, "I have found (or expect) this course to be:" The ratings are taken over a four-point scale, "Extremely," "Very," "Somewhat," "Not at All."

The twenty-four terms on the instrument originally were selected from a large set of adjectives used by students at Syracuse University when they were asked to respond to the stimulus item, "List the three words that best describe the course you have just completed." Terms are chosen for their common usage and bipolarity (Kelly, et al., 1976). (See Figure 1.)

1. Interesting	13. Challenging
2. Boring	14. A Waste
3. Relevant	15. Practical
4. Informative	16. Demanding
5. Difficult	17. Different
6. Good	18. Enjoyable
7. Stimulating	19. Enlightening
8. Irrelevant	20. Exciting
9. Worthwhile	21. Rewarding
10. Valuable	22. Provocative
11. Necessary	23. General
12. Dull	24. Useless

Figure 1. Twenty-four Adjectives Constituting the Adjective Rating Scale.

IDEA Survey

The Instructional Development and Effectiveness Assessment Survey (IDEA Survey) was developed by Hoyt (1969a) at Kansas State University. The survey is now copyrighted by the Center for Faculty Evaluation and Development in Higher Education at Kansas State.

The survey was originally developed on the assumption that one method of defining teaching effectiveness was the students' self-ratings of their progress on specific course objectives. Such objectives should represent those that the faculty member felt were emphasized in the course being rated.

In 1968, Hoyt developed a tentative set of 11 of these "course objectives." This list was submitted to a group of five professors who had previously won outstanding teaching awards at Kansas State University. On the basis of their critiques, the list was reduced to six objectives. A further critique was offered by members of student-faculty committees on effective instruction in the colleges of Agriculture, Engineering, and Home Economics at Kansas State University. As a result of suggestions from these groups, two additional objectives were selected.

An effort was made to write items which (a) represented a meaningful dimension along which instructors might vary, (b) gave evidence of being related to instructional effectiveness, and (c) described teacher behavior in sufficiently specific terms that, if it seemed desirable to alter the behavior, this could be communicated clearly (Hoyt, 1969b). These items were submitted to a variety of student and faculty groups for refinement and revision and were administered to 708 classes in the spring of 1969. The results of this administration were factor analyzed using a principal factor solution with a varimax rotation and seven factors with eigenvalues over 1 (accounting for 84% of the total variance) were extracted.

Based on the results of this 1969 administration, a second version of the items was developed. The IDEA Survey Form used in this study (Figure 2) is the third version of the form.

The 62 classes in this study reported an average enrollment of 34.8 students per class. This compares to an average class size of all courses offered at Cortland in the fall of 1975 of 26.5 students. The average attendance per class for the completion of the post-course instruments equaled 26.7 students per class. This was an average completion rate of 76%.

IDEA SURVEY FORM -- STUDENT REACTIONS TO INSTRUCTION AND COURSES

Your thoughtful answers to these questions will provide helpful information to your instructor.

• Describe the frequency of your instructor's teaching procedures, using the following code:

1 — Hardly Ever
2 — Occasionally
3 — Sometimes
4 — Frequently
5 — Almost Always

The Instructor:

1. Promoted teacher-student discussion (as opposed to mere responses to questions).
2. Found ways to help students answer their own questions.
3. Encouraged students to express themselves freely and openly.
4. Seemed enthusiastic about the subject matter.
5. Changed approaches to meet new situations.
6. Gave examinations which stressed unnecessary memorization.
7. Spoke with expressiveness and variety in tone of voice.
8. Demonstrated the importance and significance of the subject matter.
9. Made presentations which were dry and dull.
10. Made it clear how each topic fit into the course.
11. Explained the reasons for criticisms of students' academic performance.
12. Gave examination questions which were unclear.
13. Encouraged student comments even when they turned out to be incorrect or irrelevant.
14. Summarized material in a manner which aided retention.
15. Stimulated students to intellectual effort beyond that required by most courses.
16. Clearly stated the objectives of the course.
17. Explained course material clearly, and explanations were to the point.
18. Related course material to real life situations.
19. Gave examination questions which were unreasonably detailed (picky).
20. Introduced stimulating ideas about the subject.

• On each of the objectives listed below, rate the progress you have made in this course compared with that made in other courses you have taken at this college or university. In this course my progress was:

1 — Low (lowest 10 per cent of courses I have taken here)
2 — Low Average (next 20 per cent of courses)
3 — Average (middle 40 per cent of courses)
4 — High Average (next 20 percent of courses)
5 — High (highest 10 per cent of courses)

Progress on:

21. Gaining factual knowledge (terminology, classifications, methods, trends).
22. Learning fundamental principles, generalizations, or theories.
23. Learning to apply course material to improve rational thinking, problem-solving and decision making.
24. Developing specific skills, competencies and points of view needed by professionals in the field most closely related to this course.
25. Learning how professionals in this field go about the process of gaining new knowledge.
26. Developing creative capacities.
27. Developing a sense of personal responsibility (self-reliance, self-discipline).
28. Gaining a broader understanding and appreciation of intellectual-cultural activity (music, science, literature, etc.).
29. Developing skill in expressing myself orally or in writing.
30. Discovering the implications of the course material for understanding myself (interests, talents, values, etc.)

• On the next four questions, compare this course with others you have taken at this institution, using the following code:

1 — Much Less than Most Courses
2 — Less than Most
3 — About Average
4 — More than Most
5 — Much More than Most

The Course:

31. Amount of reading
32. Amount of work in other (non-reading) assignments
33. Difficulty of subject matter
34. Degree to which the course hung together (various topics and class activities were related to each other)

• Describe your attitudes toward and behavior in this course, using the following code:

1 — Definitely False
2 — More False than True
3 — In Between
4 — More True than False
5 — Definitely True

Self-rating:

35. I worked harder on this course than on most courses I have taken.
36. I had a strong desire to take this course.
37. I would like to take another course from this instructor.
38. As a result of taking this course, I have more positive feelings toward this field of study.
39. I have given thoughtful consideration to the questions on this form.

• Describe your status on the following by blackening the appropriate space on the Response Card.

A. To which sex-age group do you belong?

1 — Female, under 25
2 — Male, under 25
3 — Female, 25 or over
4 — Male, 25 or over

B. Do you consider yourself to be a full-time or a part-time student?

1 — Full-time
2 — Part-time

C. Counting the present term, for how many terms have you attended this college or university?

1 — 1 term
2 — 2 or 3
3 — 4 or 5
4 — 6 or more

D. What grade do you expect to receive in this course?

1 — A
2 — B
3 — C
4 — D or F
5 — Other

E. What is your classification?

1 — Freshman
2 — Sophomore
3 — Junior or Senior
4 — Graduate
5 — Other

F. For how many courses have you filled out this form during the present term?

1 — This is the first course
2 — 2 or 3 courses
3 — 4 or more courses

G. How well did the questions on this form permit you to describe your impressions of this instructor and course?

1 — Very well
2 — Quite well
3 — Not very well
4 — Poorly

If your instructor has extra questions, answer them in the space designated on the Response Card.

Your comments are invited on how the instructor might improve this course or teaching procedures. Use the back of the Response Card (unless otherwise directed).

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To gain some understanding of the representativeness of the faculty sample, several comparisons were made with the total faculty population at Cortland College in the fall of 1975.

The faculty participating in this study did not differ at the .01 level of significance from the total faculty population at Cortland on any of the demographic variables of sex, rank, tenure status, years of higher education experience, and division. The representativeness of the faculty sample participating in this study appears acceptable.

The distribution of the faculty sample by department was also examined. The departmental distribution of the sample is not only an additional faculty demographic variable but can also be considered a rough indicator of the distribution of classes offered by department. Results indicated that the distribution by department of the faculty sample participating in this study does not differ significantly from the distribution by department of the total faculty population at Cortland College.

The demographic variables of sex, age, full or part-time, and class were available both for students who completed the instruments used in this study and for the total population of students at Cortland College. If the sample of students participating in this investigation is compared with the total population of students at Cortland College, significant differences appear on all the variables except sex. However, the key difference appears to be the small number of graduate students in this sample. If the students in this study are compared only to Cortland Undergraduates, there is no significant difference in sex, age, or part-time/full-time status between the students participating in this sample

and the total population at Cortland. The significant difference in class status remains, however, with juniors and seniors representing 55% of the student sample in this survey and only 50% of the total undergraduate student population at Cortland College.

Analysis

The data analysis for this investigation was guided by the three questions that focused the study.

Preliminary analysis. Post-course responses for the Adjective Rating Scale were factor analyzed using the SPSS principal components analysis with a varimax rotation of factor structures with eigenvalues over one. The same procedure was followed for the 38 items of the Instructional Development and Effectiveness Assessment Survey (IDEAS). The factor structures and the labels given each factor for each instrument will be discussed in the results section.

Analysis. After the factor structures for the post-course ARS and post-course IDEAS were examined and labeled, factor scores were generated for each student. Factor scoring considers the contribution of all variables on a factor where each variable is weighted proportionally to its involvement. A factor score is a composite scale score based on a weighted sum of the individual items using the factor loading as the weights (Armour, 1974). A factor scale, on the other hand, uses only items that load highest on a given factor. Factor scoring retains the orthogonality of the factor structures (assuming one did a principal components analysis and orthogonal rotation). Factor scores were chosen rather than factor scales (factor scales increase the reliability of the factors at the expense of orthogonality) because the loss of orthogonality

may preclude the latter use of significance tests that assume independent measures. Students were grouped according to their responses to the question:

I would recommend to my best friend that:

a) They take this course from this instructor;

b) They take this course, but from a different instructor;

c) They take a course from this instructor but not this course;

d) They take neither this course nor this instructor.

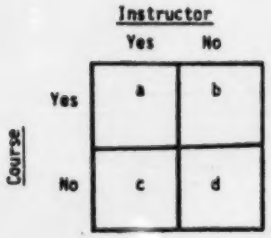

Figure 3. Grouping of Student Responses to a question eliciting their recommendation to a friend concerning course and instructor.

If the number of student responses in cells b and c had not totaled at least 10% of the total responses, it would have been assumed that students did make this distinction, at least not in response to a question worded in this manner, and no further analysis would have been conducted.

Factor scores from the post-course ARS and IDEA Survey were submitted to stepwise multiple group discriminant function analysis using the SPSS discriminant function analysis (Nie, et al., 1975). This analysis was selected because the question under investigation was directed at identifying the dimensions along which these groups differed from one another

(Tatsuoka, 1971). In other words, do students in each of the four cells differ in their post-course attitudes toward the course, and what are the dimensions along which the groups differ?

Results

Preliminary Analyses

As the first step in the analyses of the data collected for this study a factor analysis of the post-course ARS and IDEA Survey was completed. Sixty-two classes comprising 1,664 students participated in the study. Results of the principal components analysis for the two instruments are presented in Tables 1 and 2. The labels given each factor are also included in Tables 1 and 2.

Do students differentiate between "a course" and the "instructor" of a course in their evaluation of that course?

Some students do discriminate between some courses and some teachers. Students were asked to respond to the item

I would recommend to my best friend that:

a) he/she take this course from this instructor

b) he/she take this course, but from a different instructor

c) he/she take a course from this instructor, but not this course

d) he/she take neither this course nor this instructor.

If the number of students that responded "b" or "c" had totaled less than 10% of the total respondents, it would have been assumed that students could not make that distinction, at least not in the manner the question was worded, and no further analysis would have been conducted. However, the frequency and relative percentage of responses to this item were as follows--

TABLE 1

FOUR-FACTOR STRUCTURE OF PRINCIPAL COMPONENTS ANALYSIS/VARIMAX ROTATION
FOR POST-COURSE ABJECTIVE RATING SCALE
(1,664 CASES)

	FACTORS				
VARIABLES	INTEREST/AFFECT	PRACTICAL VALUE	NEGATIVE AFFECT	DIFFICULTY	COMMUNALITY
INTERESTING	.66	.27	-.39	.04	.65
BORING	-.47	-.02	.65	-.02	.64
RELEVANT	.28	.72	-.26	-.00	.66
INFORMATIVE	.40	.50	-.31	.20	.55
DIFFICULT	-.08	-.02	.13	.85	.75
GOOD	.62	.39	-.38	.03	.68
STIMULATING	.69	.29	-.34	.07	.69
IRRELEVANT	-.02	-.42	.66	.05	.62
WORTHWHILE	.48	.65	-.29	-.04	.74
VALUABLE	.40	.73	-.22	.06	.75
NECESSARY	.10	.73	-.10	.10	.56
DULL	-.43	-.12	.69	-.14	.67
CHALLENGING	.27	.14	-.10	.76	.69
A WASTE	-.13	-.33	.75	-.02	.69
PRACTICAL	.27	.74	-.15	-.03	.65
DEMANDING	.00	.10	.01	.87	.76
DIFFERENT	.55	-.11	.14	.30	.42
ENJOYABLE	.76	.24	-.26	-.15	.72
ENLIGHTING	.67	.38	-.24	.06	.66
EXCITING	.79	.26	-.13	.03	.71
REWARDING	.64	.44	-.18	-.01	.64
PROVOCATIVE	.64	.20	-.03	.12	.47
GENERAL	-.07	.12	.31	-.36	.25
USELESS	-.11	-.37	.67	-.01	.61
Eigenvalue	9.8559	2.4113	1.6372	1.3463	
% of Variance	41.1	10.0	6.8	5.6	
Cum % of Variance	41.1	51.1	57.9	63.5	

TABLE 2

EIGHT FACTOR STRUCTURE OF PRINCIPAL COMPONENTS ANALYSIS/VARIMAX ROTATION FOR IDEA SURVEY (N=1664 CASES)

Variable	Faculty Teaching Style	Faculty Empathy Towards Students	Student Cognitive Gains	Examinations (Tests)	Student Personal Gain	Course Organization	Student Workload (non-reading)	Student Workload (Reading Assignments)	Communality
1	.21	.78	.11	-.03	.09	-.04	-.07	.02	.67
2	.26	.68	.18	-.07	.14	.13	.10	-.22	.66
3	.15	.79	.13	-.10	.10	.11	-.05	.04	.69
4	.64	.14	.08	-.09	.07	.18	.09	.11	.51
5	.50	.37	.19	-.01	.15	.17	.07	-.11	.49
6	-.06	.12	-.10	.78	-.02	-.02	.01	-.01	.63
7	.75	.11	.10	-.06	.15	.20	.07	.05	.65
8	.41	.13	.31	-.03	.06	.45	.03	.17	.52
9	-.69	-.10	-.24	.15	-.10	-.14	.03	-.01	.60
10	.15	.13	.23	-.03	.07	.71	-.03	.14	.63
11	.04	.30	-.08	-.14	.37	.43	.11	.01	.45
12	-.08	-.02	-.02	.74	-.10	-.22	.09	.04	.62
13	.02	.67	.02	-.13	.13	.24	-.05	.06	.54
14	.25	.15	.21	-.16	.11	.59	.04	-.15	.54
15	.43	.21	.28	.07	.25	.14	.36	.09	.54
16	.16	.09	.18	-.06	.05	.73	.04	.02	.61
17	.35	.06	.26	-.15	.07	.64	.03	-.05	.63
18	.24	.28	.28	.06	.07	.25	-.31	.49	.62
19	-.12	-.12	-.10	.80	-.10	-.08	.13	.10	.72
20	.53	.26	.35	.04	.23	.24	-.02	.23	.64
21	.15	-.02	-.70	.00	-.04	.27	.20	.05	.64
22	.11	.07	-.73	-.07	.07	.20	.12	.04	.62
23	.08	.27	.66	-.04	.26	.09	.03	.08	.60
24	.04	.15	.66	-.09	.22	.21	.16	-.04	.59
25	.06	.13	.60	-.01	.15	.08	.22	-.03	.45
26	.19	.17	.42	.01	.64	.05	.07	-.10	.66
27	.06	.14	.40	-.06	.53	.17	.21	.07	.55
28	.29	-.04	.11	-.11	.67	.03	-.03	.02	.56
29	.05	.21	.07	-.10	.74	.09	-.01	-.04	.63
30	.16	.14	.43	.01	.57	.08	-.14	.08	.59
31	.06	-.09	.01	.09	-.02	-.03	.26	.30	.73
32	-.03	.02	.07	.03	.08	.06	.70	-.14	.53
33	.12	-.08	.04	.16	-.12	-.06	.70	.28	.64
34	.22	.00	.42	-.07	.06	.43	.09	-.01	.43
35	.17	-.11	.27	.09	.02	.14	.63	.31	.65
36	.21	-.07	.49	-.07	.10	.01	-.25	.09	.37
37	.54	.12	.43	-.14	.14	.29	-.02	-.10	.62
38	.30	.06	.63	-.10	.17	.21	-.18	.02	.60
Eigenvalue	10.622	2.930	1.958	1.927	1.477	1.363	1.134	1.038	
% of Variance	28.0	7.7	5.2	5.1	3.9	3.6	3.0	2.7	
Cumulative % of Variance	28.0	35.7	40.8	45.9	49.8	53.4	56.3	59.1	

		f	Relative %
a)	=	1115	67.0
b)	=	172	10.3
c)	=	176	10.6
d)	=	122	7.3
OMIT	=	79	4.7

and the analysis did continue.

What is the relationship between student attitudes toward a course as measured by the ARS and their recommendations to a friend?

This question was investigated by four-group stepwise discriminant function analysis. Because the overwhelming majority of students responded "a" to the item on recommendations to a friend (i.e., recommend both course and instructor), a 16% random sample was first selected from among those students who responded "a" in order to more nearly equalize the groups. Table 3 reports means, standard deviations, and univariate F ratios on the post-course ARS for the four groups that comprised the discriminant analysis for this section.

The four-group stepwise discriminant function analysis yielded three significant functions; however, only the first two functions are useful in discriminating between the four groups. The first function (see Table 4) is described by a positive loading on Interest/Affect (non-preferred direction) and Practical Value (non-preferred direction) with a negative loading on Difficulty (Course is perceived as slightly difficult). The function suggests that students view the course as uninteresting, not very practical, and with high negative affect.

TABLE 3

MEANS, STANDARD DEVIATIONS, AND UNIVARIATE F RATIOS FOR ARS FACTOR SCORES USED IN DISCRIMINANT ANALYSIS

FACTOR	GROUP I $\bar{X}$ N=170	S.D.	GROUP II $\bar{X}$ N=171	S.D.	GROUP III $\bar{X}$ N=175	S.D.	GROUP IV $\bar{X}$ N=121	S.D.	F N=637
INTEREST/AFFECT	-.303	1.037	.649	.767	.509	.838	.639	.734	46.540*
PRACTICAL VALUE	-.141	.925	.011	.945	.445	.998	.672	1.002	22.583*
NEGATIVE AFFECT	.256	.689	-.452	1.113	-.226	1.007	-1.228	1.483	46.17*
DIFFICULTY	.102	.876	.196	1.8081	-.563	1.136	-.1513	1.336	16.471*

*Significant at $p < .001$ (df = 3,633)

TABLE 4

SUMMARY OF FOUR-GROUP STEPWISE DISCRIMINANT FUNCTION ANALYSIS FOR ARS FACTOR SCORES

STEP	VARIABLE	F to Enter[c]	Wilk's Lambda	Approximate Multivariate F for Test of Lambda[a]	Change in Rho's V[b]	Significance of Change in V	Standardized Discriminant Function Coefficients		
							FUNCTION I	FUNCTION 2	FUNCTION 3
1	Interest/Affect	46.540	.819	46.540*	139.621	.001	.669	.117	.733
2	Negative Affect	53.574	.653	49.936*	184.099	.001	-.580	-.419	.538
3	Practical Value	29.742	.572	43.989*	117.435	.001	.443	.436	-.311
4	Difficulty	20.727	.521	38.840*	74.683	.001	-.235	.783	-.057
	Eigenvalue						.669	.101	.045
	Relative Percentage						82.12	12.39	5.49
	Canonical Correlation						.633	.303	.207

[a]Degrees of Freedom range from 3,633 on Step 1 to 9,1667 on Step 4.

[b]Indicates increase in discrimination attributed to that variable.

[c]Minimum F to enter -1.00

*$p < .001$

The second discriminant function is characterized by negative loadings on Practical Affect (preferred direction), with a high positive loading on Difficult (course is perceived as not difficult). Courses with high positive scores on this function would be perceived by the students as easy, with a great deal of practical value and lacking in negative affect.

Examination of the group centroids (Tables 5, 6 and Figure 4) demonstrates that the first function makes the greatest contribution to discrimination between groups 1 and 4. Students who recommended both the course and the instructor saw the course as more interesting, and slightly less difficult than did students who recommended neither the course nor the instructor. Function II is the primary discriminator between groups 2 and 3 with students who recommended the instructor but not the course (Group 3) viewing the course as very difficult, not very practical, but not necessarily characterized by negative affect. However, students who recommended the course but not the instructor are almost the opposite, viewing the course as not difficult, pragmatic, but generating a certain amount of negative affect.

The classification results (see Table 7) show that, overall, 52.12% of the cases were correctly classified based on their ARS factor scores.

> What is the relationship between student ratings of instruction as measured by the IDEA Survey and their recommendations to a friend?

To examine this question, the eight IDEA Survey factors were submitted to a four-group stepwise discriminant analysis. As in the previous question, a 16% random sample was first selected from students who

TABLE 5

CENTROIDS FOR FOUR GROUPS ON THREE DISCRIMINANT FUNCTIONS USING ARS FACTOR SCORES

	FUNCTION I	FUNCTION II	FUNCTION III
GROUP 1			
RECOMMEND BOTH COURSE AND INSTRUCTOR	-.960	-.001	-.138
GROUP 2			
RECOMMEND COURSE NOT INSTRUCTOR	.108	.367	.229
GROUP 3			
RECOMMEND INSTRUCTOR NOT COURSE	.245	-.439	.129
GROUP 4			
RECOMMEND NEITHER COURSE NOR INSTRUCTOR	.841	-.117	-.316

TABLE 6

MULTIVARIATE F MATRIX OF CENTROID DIFFERENCES

	GROUP 1	GROUP 2	GROUP 3
GROUP 2	46.34*		
GROUP 3	57.90*	16.19*	
GROUP 4	95.70*	22.40*	20.20*

df = (4,630)

*Significant at $p < .01$

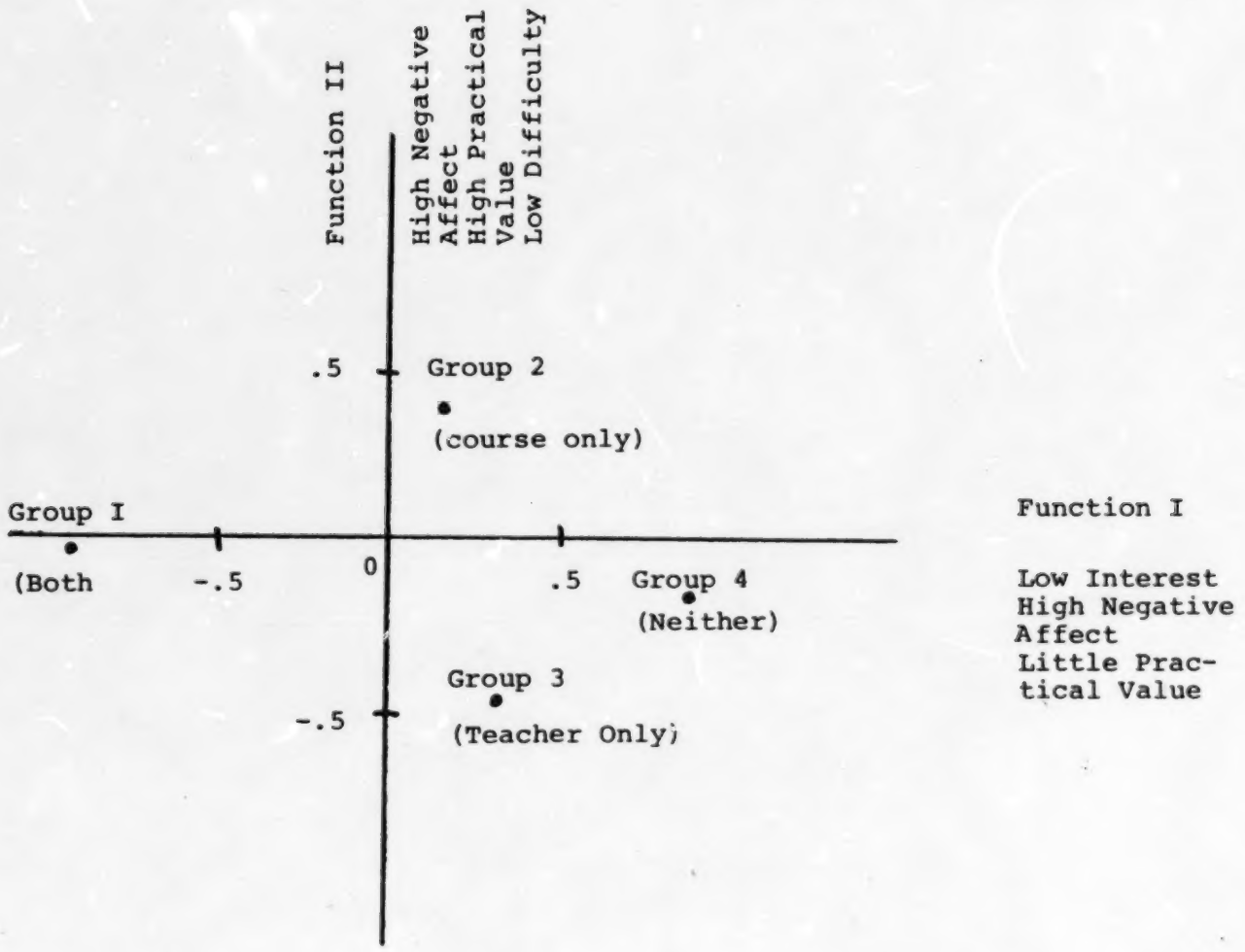

Figure 4 Plot of Group Centroids on First Two Discriminant Functions Using ARS Factors

24

TABLE 7

PREDICTED CLASSIFICATION OF FOUR GROUPS WITH ARS FACTOR SCORES

ACTUAL GROUP		PREDICTED GROUP: RECOMMEND TEACHER AND COURSE	RECOMMEND COURSE ONLY	RECOMMEND TEACHER ONLY	RECOMMEND NEITHER TEACHER NOR COURSE	PRIOR PROBABILITY	%CORRECT CLASSIFICATION
RECOMMEND BOTH TEACHER AND COURSE	N=170	114	32	22	2		
		67.1%	18.8%	12.9%	1.2%	26.7	67.1%
RECOMMEND COURSE ONLY	N=171	29	80	42	20		
		17.0%	46.8%	24.6%	11.7%	26.8	46.8%
RECOMMEND TEACHER ONLY	N=175	19	47	89	20		
		10.9%	26.9%	50.9%	11.4%	27.5	50.9%
RECOMMEND NEITHER TEACHER NOR COURSE	N=121	6	33	33	49		
		5.0%	27.3%	27.3%	40.5%	19.0	40.5%

Overall Percent Correct Classification for Four Groups = 52.12%

responded "a" on the item concerning recommendations to a friend in order to more nearly equalize the groups. Table 8 gives the means, standard deviations, and univariate F ratios for the four groups on each of the eight IDEA factors.

The four-group discriminant function analysis yielded two significant functions (the third function just barely reached significance, and results are reported in the tables, but the function is not interpreted). The first function is characterized primarily by negative loadings on the first, third and sixth IDEA factors (see Table 9). These factors respectively are Faculty Teaching Style, Student Cognitive Gain, and Organization. There is also a smaller negative loading on Factor 5, Student Personal Gain. Much as in the first function from the ARS discriminant analysis, this function could be considered a negative function characterized by perceived poor teaching style, little student cognitive gain, poor course organization, etc.

Function II most clearly separates the course from the instructor with the only high positive loading being Factor 7, Student Work Load (non-reading), although there are mildlly positive loadings on instructor teaching style. Curiously enough this function contains a negative loading on Factor 8, Student Work Load (reading assignments). Just as items pertaining to reading and non-reading assignments broke out into separate factors in the factor analysis, the factors now seem to be operating independently in the second discriminant function. The students in this study apparently made a distinction between the number of reading assignments and number of non-reading assignments.

TABLE 8

MEANS, STANDARD DEVIATIONS AND UNIVARIATE F RATIOS FOR IDEA FACTOR SCORES ON DISCRIMINANT ANALYSIS

FACTOR	GROUP I $\bar{X}$ N=176	GROUP I S.D. N=176	GROUP II $\bar{X}$ N=172	GROUP II S.D. N=172	GROUP III $\bar{X}$ N=174	GROUP III S.D. N=174	GROUP IV $\bar{X}$ N=121	GROUP IV S.D. N=121	F N=643
Faculty Teaching Style	.243	.889	-.844	1.13	-.097	.983	-.911	1.131	48.139**
Faculty Empathy Towards Students	.022	1.011	-.111	.983	-.030	1.046	-.195	1.105	1.238
Student Cognitive Gain	.229	.913	-.412	.960	-.461	1.020	-.803	1.063	29.615**
Examinations (Tests)	-.192	.862	.122	1.150	.167	1.101	.395	1.229	7.520**
Student Personal Gain	.144	1.030	-.110	.994	-.311	.974	-.330	1.084	7.687**
Course Organization	.129	.980	-.372	1.106	.001	1.080	-.494	1.271	11.134**
Student Work Load (Non-Reading)	-.038	.918	-.165	1.023	.628	1.161	.347	1.188	19.6307**
Student Work Load (Reading Assignment)	-.011	.983	.211	1.074	-.145	1.057	.013	1.13	3.3465*

*Significant at $p < .05$ (df = 3,639)

**Significant at $p < .01$

TABLE 9

SUMMARY OF FOUR-GROUP STEPWISE DISCRIMINANT FUNCTION ANALYSIS FOR IDEA FACTOR SCORES

STEP	VARIABLE	F to Enter[c]	Wilk's Lambda	Approximate Multivariate F for Test of Lambda[a]	Change in Rho's V[b]	Significance of Change in V	Standardized Discriminant Function Coefficients FUNCTION 1	FUNCTION 2	FUNCTION 3
1	Faculty Teaching Style	48.139	.816	48.139*	144.415	.001	-.692	.321	-.187
2	Student Cognitive Gain	40.618	.685	44.314*	141.999	.001	-.554	-.250	-.152
3	Student Work Load (Non-Reading)	20.864	.624	36.894*	66.896	.001	.143	.735	-.017
4	Organization	13.905	.585	31.483*	57.917	.001	-.325	.210	.544
5	Examination	10.725	.557	27.603*	48.254	.001	.269	.102	-.366
6	Student Personal Gain	9.614	.533	24.850*	42.191	.001	-.231	-.272	-.414
7	Empathy Towards Students	3.598	.524	21.867*	17.532	.001	-.155	.063	.391
8	Student Work Load (Reading Assignments)	3.228	.516	19.583*	11.128	.011	.003	-.307	.470
	Eigenvalue						.669	.159	.002
	Relative Percentage						80.58	19.15	.27
	Canonical Correlation						.633	.370	.047

[a] Degrees of freedom range from 3,639 on Step 1 to 8,632 on Step 8

[b] Indicates increase in discrimination attributable to that variable

[c] Mininum F to enter = 1.00

*p < .001

As might be expected, Function I was the most important in discriminating between Groups 1 and 4 (see Tables 10, 11 and Figure 5). Students who recommended both the course and the instructor felt the instructor had a positive teaching style, that they made substantial cognitive gains in the course and that the course was well organized. Students who recommended neither the course nor the instructor felt just the opposite.

Function II most clearly discriminates between Groups 2 and 3. Students who recommended the course but not the instructor saw the course as requiring only a small number of non-reading assignments (but more reading assignments). They also did not think highly of the instructor's teaching style. Students who recommended the instructor but not the course again felt just the opposite; they felt the course required a large number of non-reading assignments and, to a lesser degree, that the instructor had a pleasing teaching style. The primary discriminating variable was clearly the number of non-reading assignments.

The classification results (see Table 12) show that 54.74% of the cases were correctly classified.

> What is the relationship among student ratings of instruction as measured by IDEAS, student attitudes toward a course as measured by the ARS, and student recommendations to a friend?

To examine this question the four post-course ARS factors plus the eight post-course IDEA factors were submitted to a four-group stepwise discriminant function analysis. As in the two previous questions, a 16% random sample of students who responded "a" (recommended both course and instructor) was first selected. Table 13 reports the means, standard

TABLE 10

CENTROIDS OF FOUR GROUPS ON THREE DISCRIMINANT FUNCTIONS USING IDEA FACTOR SCORES

	FUNCTION I	FUNCTION II	FUNCTION III
GROUP 1			
RECOMMEND BOTH COURSE AND INSTRUCTOR	-.916	-.140	-.030
GROUP 2			
RECOMMEND COURSE NOT INSTRUCTOR	.367	-.448	.046
GROUP 3			
RECOMMEND INSTRUCTOR NOT COURSE	-.023	.532	.037
GROUP 4			
RECOMMEND NEITHER COURSE NOR INSTRUCTOR	.845	.077	-.075

TABLE 11

MULTIVARIATE F MATRIX OF CENTROID DIFFERENCES

	GROUP 1	GROUP 2	GROUP 3
GROUP 2	30.65*		
GROUP 3	20.01*	14.57*	
GROUP 4	46.14*	6.24*	13.26*

df = (8,632)
*Significant at p < .01

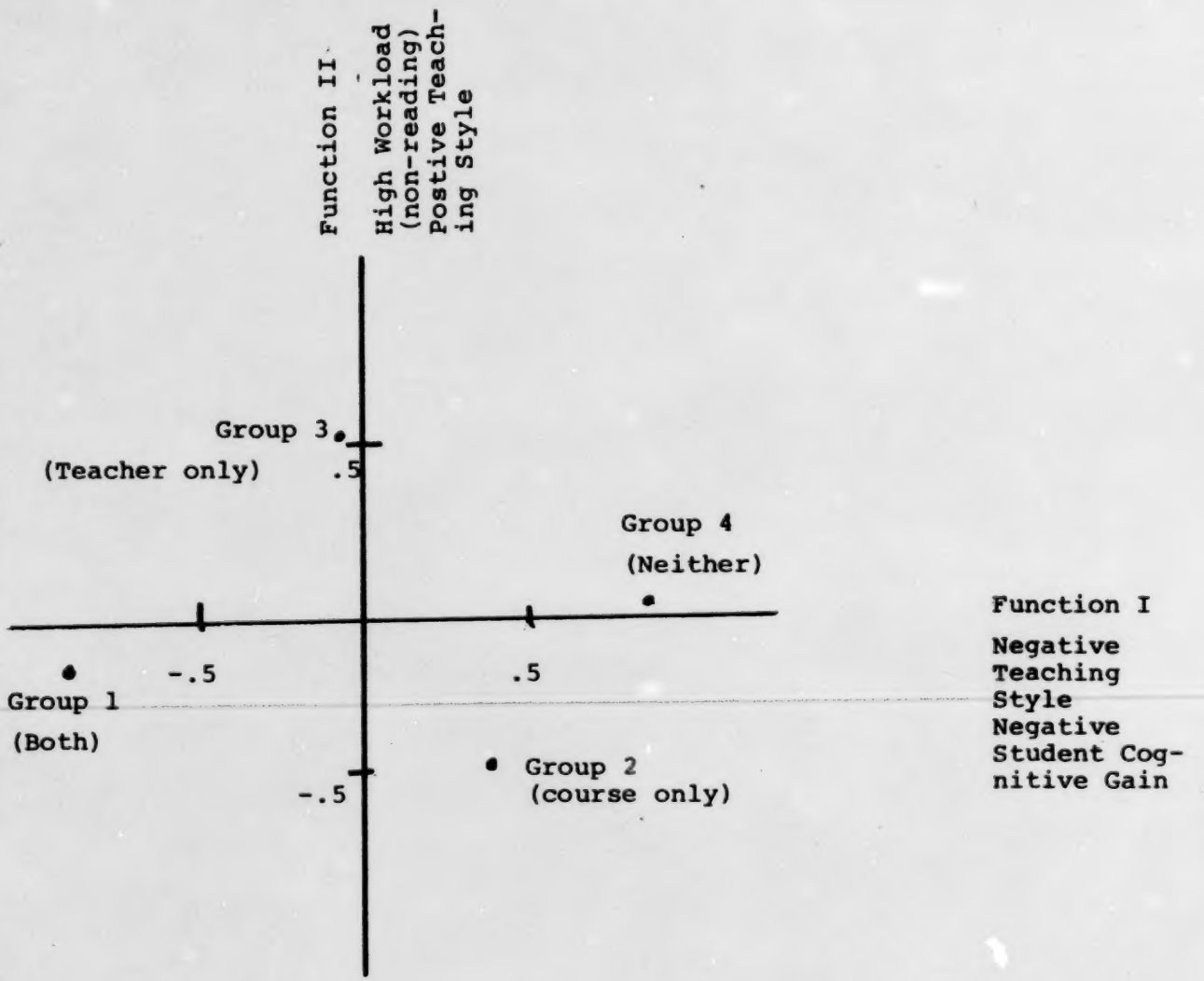

Figure 5. Plot of Group Centroids on First Two Discriminant Functions Using IDEA Factors

TABLE 12

PREDICTED CLASSIFICATION OF FOUR GROUPS USING IDEA FACTOR SCORES

ACTUAL GROUP	PREDICTED GROUP: BOTH TEACHER AND COURSE	COURSE ONLY	TEACHER ONLY	NEITHER TEACHER NOR COURSE	PRIOR PROBABILITY	% CORRECT CLASSIFICATION
BOTH TEACHER AND COURSE N=176	122	26	26	2		
	69.3%	14.8%	14.8%	1.1%	27.4	69.3%
COURSE ONLY N=172	25	95	31	21		
	14.5%	55.2%	18.0%	12.2%	26.7	55.2%
TEACHER ONLY N=174	38	29	88	19		
	21.8%	16.7%	50.6%	10.9%	27.1	50.6%
NEITHER TEACHER NOR COURSE N=121	9	43	22	47		
	7.4%	35.5%	18.2%	38.8%	18.8	38.8%

Percent of cases correctly classified = 54.74%

TABLE 13

MEANS, STANDARD DEVIATIONS AND UNIVARIATE F RATIOS FOR ARS FACTORS AND IDEA SURVEY FACTOR ON FOUR GROUP DISCRIMINANT ANALYSIS

FACTOR	GROUP I X N=170	GROUP I S.D.	GROUP II X N=171	GROUP II S.D.	GROUP III X N=175	GROUP III S.D.	GROUP IV X N=121	GROUP IV S.D.	F N=634
1. Interest/Affect (ARS)	-.31	1.04	.65	.77	.51	.84	.63	.73	45.345 *
2. Practival Value (ARS)	.14	.92	.01	.94	.41	1.00	.67	1.01	22.184
3. Negative Affect (ARS)	.26	.69	-.45	1.11	-.22	1.01	-1.23	1.49	46.427
4. Difficulty (ARS)	.10	.88	.19	1.08	.57	1.14	-.16	1.34	16.592
5. Teaching Style (IDEA)	.21	.88	-.83	1.12	-.10	.98	-.92	1.13	44.974
6. Empathy Towards Students (IDEA)	.01	1.01	.11	.98	-.03	1.05	-.19	1.11	1.057
7. Cognitive Gain (IDEA)	.23	.91	-.40	.96	-.47	1.02	-.80	1.07	28.738
8. Examination (Tests) (IDEA)	-.21	.87	.13	1.15	.17	1.10	.38	1.22	7.576
9. Personal Gdin (IDEA)	.16	1.03	-.11	.99	-.31	.98	-.34	1.08	8.335
10. Organization (IDEA)	.15	.96	-.38	1.10	.00	1.08	-.49	1.28	11.905
11. Work Load (Non-Reading) (IDEA)	-.01	.92	-.16	1.02	.64	1.16	.34	1.19	19.084
12. Work Load (Reading Assignments) (IDEA)	-.00	.99	.21	1.08	-.15	1.06	.01	1.14	3.388

*All Univariate F Ratios except those for factor 6 and 12 are significant at $p \leq .01$ (d.f. = 3,630)

deviations, and univariate F ratios for the four groups on each of the twelve-factor score distributions.

The four-group discriminant function analysis yielded three significant discriminant functions (see Table 14). Caution must be used by the reader in examining the function coefficients in Table 14. For the ARS factors, small numbers are the extremes (i.e., more positive for positive adjectives, more negative for negative adjectives). For the IDEA Survey factors, large numbers are the extremes.

The first function might best be described as a Positive Interest or Affect function. The function is characterized by loadings on ARS Interest/Affect and IDEA Teaching Style in the preferred direction and a positive loading on ARS Negative Affect (preferred direction). The function is most important in discriminating between Groups 1 and 4. (See centroids of functions, Tables 15, 16, and Figure 6). Function II is the most helpful in discriminating between Groups 2 and 3. But, as illustrated in Table 14, the second function is more difficult to characterize. The loadings for ARS Interest/Affect and Practical Value are in positive directions, but several of the IDEA factors that one would expect to correlate positively with Interest/Affect and Practical Value load on the function negatively. It could be interpreted that this function taps the distinction between the ARS and the IDEA since Group 2 (recommend course only) has a positive centroid for this function, while Group 3 (recommend teacher only) had a negative centroid. Function III, although significant, is not very useful in distinguishing among the four groups (see Table 15 and hence is not interpreted).

TABLE 14

SUMMARY OF FOURGROUP STEPWISE DISCRIMINANT FUNCTION ANALYSIS FOR ARS FACTOR SCORES AND IDEA FACTOR SCORES

Step	Variable*	F to Enter	Wilks Lamda	Approximate Multivariate F for Test of Lamda[a]	Change in RAD's $s_V b$	Significance of Change in V	Standardized Discriminant Function Coefficients Function: I	II	III
1	ARS 3	46.427	.819	46.427	139.280	.001	.349	.169	-.589
2	ARS 1	53.510	.652	49.907	183.388	.001	-.363	-.940	-.704
3	ARS 2	29.291	.572	43.766	115.649	.001	-.291	-.512	.31
4	ARS 4	20.459	.520	38.711	75.018	.001	.206	.321	.328
5	IDEA 1	15.459	.484	34.585	64.721	.001	.404	-.585	-.010
6	IDEA 6	6.745	.469	30.120	24.270	.001	.138	-.411	.082
7	IDEA 7	4.154	.460	26.490	14.789	.001	-.009	-.315	.244
8	IDEA 3	3.730	.452	23.716	16.053	.001	.205	-.284	.169
9	IDEA 4	2.881	.446	21.445	14.721	.002	-.143	.107	.013
10	IDEA 8	2.483	.441	19.581	9.057	.029	.004	.237	.079
11	IDEA 2	2.266	.436	18.034	8.360	.039	.033	-.210	-.169
12	IDEA 5	1.543	.432	16.668	8.034	.045	.105	.023	-.125
Eigenvalue							.787	.230	.052
Relative Percentage							73.65	21.48	.432
Canonical Correlation							.664	.432	.223

*See Table 10 for Variable names

TABLE 15

Centroids for Four Groups on Three Discriminant Functions Using ARS and IDEA Factor Scores

	Function I	Function II	Function III
Group 1 Recommend Both Course and Instructor	.997	-.078	.147
Group 2 Recommend Course Not Instructor	-.240	.533	-.228
Group 3 Recommend Instructor Not Course	-.117	-.629	-.159
Group 4 Recommend Neither Instructor Nor Course	-.901	.037	.346

TABLE 16

Multivariate F Matrix of Centroid Differences

	Group 1	Group 2	Group 3
Group 2	21.81*		
Group 3	20.48*	11.86*	
Group 4	37.18*	8.22*	11.05*

dif = (12,619)

*Significant at $p < .01$

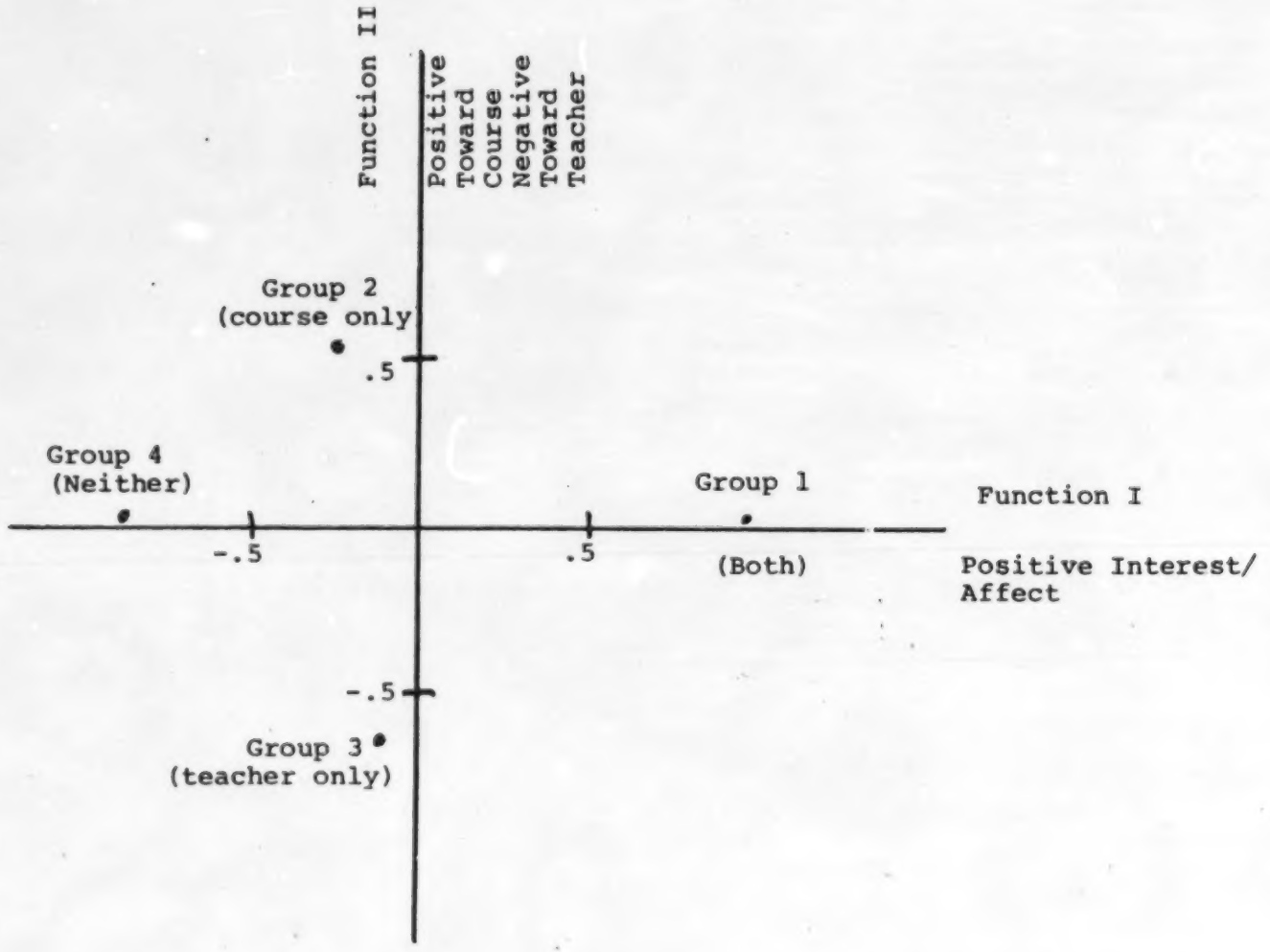

Figure 6. Plot of Group Centroids on First Two Discriminant Functions Using IDEA Factors and ARS Factors

Table 17 summarizes the classifications of the four groups using both the ARS and IDEA factors. The combination of the two sets of factors correctly classified 57.10% of the cases. Although this is only a slight increase over the number correctly classified by either the ARS or the IDEA alone, it is still more than twice the chance value and significant at $p \leq .0001$.

Summary and Discussion

Students were asked to respond to the following question:

I would recommend to my best friend that:

a) They take this course from this instructor.

b) They take this course, but from a different instructor.

c) They take a course from this instructor but not this course.

d) They take neither this course nor this instructor.

Students were grouped according to whether they responded a, b, c, or d to the above question. The factors of the post-course Adjective Rating Scale were then examined to see if they could be used to discriminate among the groups, in other words, to determine how well the students' factor scores could predict group membership (the analysis used was a four-group discriminant function analysis). The factors of the IDEA Survey were also examined for their discrimination ability, and lastly all 12 factors were used together.

In each of the three analyses, two significant dimensions were found. Also, in each instance, the first and most powerful significant function, was the most useful in discriminating between Groups a and d. This result is logically appealing because Groups a and d (Recommend Both Teacher and Course, and Recommend Neither) should be the "most

TABLE 17

PREDICTED CLASSIFICATION OF FOUR GROUPS USING ARS FACTOR SCORES AND IDEA FACTOR SCORES

Actual Group		PREDICTED GROUP Group 1	Group 2	Group 3	Group 4	Prior Probability	% Correct Classification
Group 1 Recommend Both Teacher & Course	N = 170	118 69.4%	25 14.7%	27 15.9%	0 0.0%	26.8	69.4%
Group 2 Recommend Course Only	N = 171	25 14.6%	97 56.7%	27 15.8%	22 12.9%	27.0	56.7%
Group 3 Recommend Teacher Only	N = 173	22 12.7%	35 20.2%	99 57.2%	17 9.8%	27.3	57.2%
Group 4 Recommend Neither	N = 120	4 3.3%	42 35.0%	26 21.7%	48 40.0%	18.9	40.0%

Percent of Cases Correctly Classified = 57.10%

different." The second dimension (second discriminant function) was consistently the most useful in discriminating between groups b and c, and, as might be expected, was more complicated but also perhaps more interesting. It represented an attempt to discriminate between those students who would recommend the course but not the instructor and vice versa. Tables 18, 19 and 20 summarize the results of the three discriminant analyses.

All three tables illustrate that the dimension that separates students who recommended both the course and the instructor from students who recommended neither is intuitively appealing in that all factors load in the preferred direction for students who recommend both the course and the instructor, and all load in the non-preferred direction for students who recommend neither the course nor the instructor. It is more difficult to interpret the dimension that describes students who recommend the course but not the instructor and vice versa. The same difficulty that exists in clearly distinguishing between Groups b and c exists in other attempts to separate instructor effect from course effect in the evaluation of instruction.

Hogan (1973) also tried to separate course effects from teacher effects in student ratings of instruction. He correlated student ratings gathered from (1) a group of instructors who taught the same course twice, (2) a group of instructors teaching two different courses, and (3) the same course taught by two different instructors. As might be expected, Hogan found that the highest correlations occurred between two different sections of the same course taught by the same instructor, but from then on his results were not clear cut. Hogan found the difficulty

TABLE 18

ADJECTIVE RATING SCALE FACTORS AND STUDENTS' "RECOMMENDATIONS TO A FRIEND"

Course \ Teacher	Yes	No
Yes	Positive Interest/ Affect Little Negative Affect High Practical Value	Not Difficult Very Practical Moderately High Negative Affect
No	Very Difficult Not Very Practical Moderately Low Negative Affect	Low Interest/ Affect High Negative Affect Little Practical Value

TABLE 19

IDEA SURVEY FACTORS AND STUDENTS' "RECOMMENDATIONS TO A FRIEND"

Course \ Teacher	Yes	No
Yes	Good Faculty Teaching Style Substantial Student Cognitive Gain Well-Organized Course	Large Amount of Reading Few Non-reading Assignments Poor Teaching Style
No	Large Number of Non-reading Assignments Moderately Pleasing Teaching Style Not too many Reading Assignments	Poor Teaching Style Lack of Student Cognitive Gain Poorly Organized Course

TABLE 20

ARS FACTORS AND IDEA SURVEY FACTORS AND STUDENTS' "RECOMMENDATIONS TO A FRIEND"

Course \ Teacher	Yes	No
Yes	Positive Faculty Teaching Style (IDEA) High Interest/ Affect (ARS) Little Negative Affect (ARS)	High Interest/Affect (ARS) High Practical Value (ARS) Not Very Difficult (ARS) Poor Faculty Teaching Style (IDEA) Poor Course Organization (IDEA) Low Non-reading Workload (IDEA)
No	Low Interest/ Affect (ARS) Low Practical Value (ARS) Quite Diffiuclt (ARS) Good Faculty Teaching Style (IDEA) Good Course Organ-ization (IDEA) High Non-reading Workload (IDEA)	Poor Faculty Teaching Style (IDEA) Low Interest/Affect (ARS) Much Negative Affect (ARS)

48

level of the course was more a function of the course than of the instructor (results supported by this study). He also found that the structure of the course (a factor similar to Course Organization with a little overlap with ARS Interest/Affect) was more a function of the instructor than of the course (again the results were supported by this study). However, Hogan did not find his rapport factor (similar to the IDEA Faculty Empathy Towards Students) clearly to be a function of the instructor, as one might expect it to be. The correlation between two different courses taught by the same instructor (N=45 pairs) on rapport was .47, and the correlation between the came course taught by two different instructors (N=39 pairs) on the same factor was .50. An overall evaluative function similar to ARS Interest/Affect was more highly correlated when the same instructor taught different courses than when the same course was taught by different instructors; however, the correlation was substantially higher if both the course and the instructor were the same. Direct comparisons between the Hogan study and this study are difficult because the names of the factors differ greatly, and Hogan did not include a copy of the instrument so individual items could be compared. In general, the results of this study appear to support those of Hogan.

In the last few years, instructional development in higher education has been characterized by at least two competing approaches. One approach concentrates on increasing the instructors' reservoir of teaching techniques through the use of media, simulation, etc., and by attempting to make the instructor more open and sympathetic to students (Freedman, 1973). A second approach gathers all the instructors involved in a particular course--or sequence of courses--and systematically redesigns

the course, building options for the student (both in content and time) into the structure of the course (Diamond, et al., 1975). The second approach looks predominantly at the course and does not deal directly with the pedagogical skills of the instructor. The results of this study seem to imply the structure and content of the course and the pedagogical skill of the instructor must be considered in improving the instructional experience for the students. These findings are supported by recent research of Pascarella and Terenzini (in press) which demonstrates that faculty-student interaction is not only an important variable in discriminating between students who drop out of college and those who stay, but is also a significant predictor of G.P.A. even after controlling for the student pre-enrollment characteristics.

Students apparently not only can, but do, make a distinction between a course and the instructor of a course. It is important to note, however, that such distinctions do not appear to be clear cut. For example, student ratings of teaching behavior overlap with their ratings of course characteristics, and students' course-oriented attitudes have much in common with their ratings of certain teacher behaviors. Furthermore, the courses used in this study were, for the most part, traditional lecture courses. Many questions remain unanswered in considering the overlap between the course and the instructor. What, for example, might the difference be in individualized courses, where the instructor plays a less central role in transmitting course content, or--at the other extreme--in certain seminar courses where the course has little structure or content beyond that given by the instructor through discussions with the students.

For example, Chapman, Holloway, and Kelly (1977) used the ARS in combination with a new measure called the Classroom Behavior Survey to predict low and high achievers in a Personalized System of Instruction (PSI) course in psychology developed at Syracuse University and taught to high school juniors and seniors. They reported that Teacher Enthusiasm, as measured by the CBS, was still a significant predictor of student achievement even after the contribution of high school grade point average had been entered in a multi-group stepwise discriminant analysis. This result is important because the frequency and format of teacher behavior during instruction had been severely curtailed and redefined in the course.

It should be noted that the psychometric properties of the IDEA Survey have not been thoroughly examined. A principal components analysis of the instrument yielded eight factors that were shown to have much in common with the factors of an instrument designed to assess student attitudes toward a course, namely the Adjective Rating Scale. However, the IDEA Survey is a complex, multidimensional instrument and all the psychometric properties of the instrument were not examined in this study, nor has an examination of such properties been previously published.

Limitations of the Study

The implications of this study are limited by two classes of variables, instrumentation, and environmental factors including sampling.

Low or unknown reliability is a pervasive problem with measures of attitude generally, and this study has not escaped this issue. Little information was available on either the test-retest reliability or the parallel form reliability of the measures used in this study.

Far more information was available concerninng the Adjective Rating Scale than was available for the IDEA Survey. Both of these instruments are appealing to faculty for various reasons. The IDEA Survey has a unique method of reporting student opinion data back to faculty, a method that takes instructors' goals for the course as well as student perceptions into account. The IDEA Survey is currently in use in over 30,000 classrooms across the country, but empirical data on the instrument is sorely lacking.

Although more information is available on the ARS, further investigation of this instrument--its validity and reliability--and its factor structure when taken over other levels of programming appears to be a promising direction for further research. The ARS is easy to administer, and, with its course, as opposed to teacher behavior orientation, is relatively non-threatening to most faculty.

This study was also limited by environmental factors. The faculty participating in the study were self-selected and were not a random sample of Cortland College faculty members, much less of, higher education faculty in general. Although an attempt was made to include all departments in the college and both lower level and upper level courses, the interest in their students' opinions and friendship with the principal investigator.

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